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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,449	10/31/2000	Stepan Sokolov	SUN1P814/P5417	1902

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EXAMINER

KENDALL, CHUCK O

ART UNIT	PAPER NUMBER
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2122

DATE MAILED: 10/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/703,449

Applicant(s)

SOKOLOV ET AL.

Examiner

Chuck O Kendall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2000.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☒ Claim(s) 3,5,8,9,13-15 and 18-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,4                      6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. This action is in response to the application filed 10/31/00.
2. Claims 1-28 have been examined.

### Related Applications

3. Applicant is advised to update related applications in cross-reference section of specification.

### Objections

The specification is objected to. The use of the trademark Java has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner, which might adversely affect their validity as trademarks.

Claims 3,5,8,9,13-15,18-28 are also rejected for the same reason.

### Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 11-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 11 is neither an Apparatus or process and doesn't fall under any known category of statutory matter. As disclosed claim cites a "data structure" and is not an acceptable Hybrid statutory category such as product by process. And even if it is a process, claims 11-15 would still be considered non-

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statutory for the following reasons. For eligibility under 35 U.S.C. 101, claims have to meet certain guidelines to be considered statutory,

- (1) "Tangible" - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. § 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.
- (2) "Concrete" - Another consideration is whether the invention produces a "concrete" result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

#### Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 7 recites the limitation " writing a representation of second command associated " in line 2. There is insufficient antecedent basis for this limitation in the claim.

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

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which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 11-15 sites a data structure, but shows neither what it is being intended for nor an output or result within a computer environment.

### Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-9, & 11-21 are rejected under 35 U.S.C. 102(e) as being anticipated Augusteijn et al. USPN 6,292,883 B1 (hereinafter Augusteijn).

Regarding claims 1,11, & 21 Augusteijn anticipates a method of creating data structures, an object oriented programming environment (1:44-46, Java) suitable for use by a virtual machine to execute computer instructions, the method comprising:

converting a stream of commands and data associated with the commands into a pair of streams for use in the virtual machine, the pair of streams including a code stream that includes the commands and a data stream that includes the data associated with the commands in the code stream (7:3-10,23-30).

Regarding claims 2 & 12, a method as recited in claim 1, wherein the code stream includes only commands and the data stream includes only the data associated with the commands in the code stream (7:1-6).

Regarding claims 3,13, &18 a method as recited in claim 1, wherein the stream that is to be converted is a Java bytecode stream, the code stream is a Java bytecode code stream that includes Java commands, and the data stream is a Java bytecode data stream that includes the data associated with the Java commands in the java bytecode code stream (13:28-30, note Java bytecode is the same as a virtual machine instruction as stated in prior art, and refer to, 7:3-10,23-30).

Regarding claim 4, a method as recited in claim 1, wherein said converting of said stream comprises:

writing a representation of a first command associated with a first instruction into a code entry of the code stream (2:63 – 3: 10, see table and microcode and storing for writing);

determining whether the first command has data associated with it (10:25-27);  
and

writing a representation of the associated data or a reference to a representation of the data associated with the first command into a first data entry of the data stream when the command has an associated data (2:63 – 3: 20, see conversion or microcode stored in ROM).

Regarding claim 5, a method as recited in claim 4, wherein the stream that is to be converted is a Java bytecode stream, the code stream is a Java bytecode code stream that includes Java commands, and the data stream is a Java bytecode data stream that includes the data associated with the Java commands in the java bytecode code stream (10:30-35, for writing data see “stored”).

Regarding claim 6, a method as recited in claim 4, wherein said method further comprises:

not providing a data entry in the data stream for the command when the command does not have data associated with it (10:23-27, see “ may use autonomous conversion” or “ shared logic”).

Regarding claim 7, a method as recited in claim 6, wherein said method further comprises:

writing a representation of second command associated with another instruction into a second code entry of the code stream (10:25-30, see for each of the virtual machines and fig. 3 shows 2 VM's, 332 and 336);

determining whether the second command has data associated with it; and writing a representation of the associated data or a reference to a representation of the data associated with the second command into a second data entry of the data stream when the command has associated data (10:20-35).

Regarding claim 8, a method as recited in claim 7, wherein the stream that is to be converted is a Java bytecode stream, the code stream is a Java bytecode code stream that includes Java commands, and the data stream is a Java bytecode data stream that includes the data associated with the Java commands in the java bytecode code stream (7:23-30).

Regarding claims 9 & 14, a method as recited in claim 8, wherein the command and data entries can each include a number of bytecodes in the Java bytecode stream, wherein the number of bytecodes is an integer, and wherein each byte code can be one or more bytes (13:25-30).

Regarding claim 15, a data structure as recited in claim 14, wherein the Java commands can be a load constant command, an invoke method command, a jump command, an instantiation command, or a get/put field command (6:30-45, see pointing by pointer / jump command, class loader and retrieve field).

Regarding claim 16, Augusteijn anticipates a method of executing computer instructions on a virtual machine, the method comprising:

fetching a command associated with a computer instruction from a code stream (7:20-25);

determining whether the command has an associated parameter (10:47-55);

fetching from a data stream the associated parameter of the command when said

determining determines that command has an associated parameter (10:47-55);

and executing the command with the associated parameters after the associated

parameter of the commands have been fetched (10:47-55, for command see conversion means).

Regarding claim 17, a method as recited in claim 16, wherein the method further comprises:

updating a pointer to the command stream (11:20-25, see change of instruction pointer); and

updating a pointer to the data stream (10:30-40).

Regarding claim 19, see claim 14 for reasoning.

Regarding claim 20, is the method claim corresponding to claim 15 and is rejected using the same rationale, as in claim 15.

### Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Augusteijn et al. USPN 6,292,883 B1 (hereinafter Augusteijn) as applied in claim 9, in view of Wahbe et al. USPN 6,151,618 (hereinafter Wahbe).

Regarding claim 10, Augusteijn discloses all the claimed limitations as applied in claim 9 above. Augusteijn doesn't explicitly disclose wherein the first and second entries of the code stream are adjacent to each other. However, Wahbe does disclose this feature (17:33-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Augusteijn and Wahbe because,



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associating or combining adjacent entries of code, "This ensures that the operand specialization technique will not compete with the opcode combination technique by further specializing an instruction before the combiner has a chance to consider a less-specialized version"(17:50-55).

10. Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Augusteijn et al. USPN 6,292,883 B1 (hereinafter Augusteijn) as applied in claim 21, in view of Toutonghi et al. USPN 5,2920,720 (hereinafter Toutonghi).

Regarding claim 22, Augusteijn discloses all the claimed limitations as applied in claim 21, above. Augusteijn doesn't explicitly reading and processing the associated data from a Constant Pool when the command has an associated data. However, Toutonghi does disclose this feature (6:37-40). Therefore, it would have been obvious to one of ordinary skill in the art at the invention was made to combine Augusteijn and Toutonghi because, associating static data or constant data in a Java environment using a constant pool, would make associating the variables or data more efficient.

Regarding claim 23, a method as recited in claim 22, wherein said processing operates to determine a constant value associated with a Java Load Constant command (Toutonghi, 5:50-55, see verifier which checks form of the bytecodes, also see fig.2, 114, 100).

Regarding claim 24, a method as recited in claim 22, wherein said processing operates to determine a reference to a method invocation cell that includes information relating to a Java invoke method command (Toutonghi, fig.2, 112).

Regarding claim 25, a method as recited in claim 22, wherein said processing operates to determine the code stream offset and data stream offset associated with a Java jump command (Toutonghi,3:10-15).

Regarding claim 26, a method as recited in claim 22, wherein said processing operates to process a Constant Pool associated with a Java instantiation command (Toutonghi, 3:5-15).

Regarding claim 27, a method as recited in claim 22, wherein said processing operates to process a Constant Pool associated with a Java Get/Put field command (Toutonghi, 6:35-46, for retrieve data field).

Regarding claim 28, a method as recited in claim 22, wherein said processing operates to process data associated with a Java load constant command, a Java invoke method command, a Java jump command, a Java instantiation command, or a Java get/put field command (Toutonghi, 3:1-15, see method, table pointer (jump command), instance, see 6:35-46, for retrieve data field).

### Correspondence Information

11. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Chuck O. Kendall who may be reached via telephone at (703) 308-6608. The examiner can normally be reached Monday through Friday between 8:00 A.M. and 5:00 P.M. est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached at (703) 305-4552.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

For facsimile (fax) send to 703-7467239 official and 703-7467240 draft

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Art Unit: 2122  
10/6/03*